APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,218	06/08/2001	Robert L. Phillips	82001-0311	6183

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EXAMINER
BYLCIW, STEPHEN

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 07/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>08 June 2001</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-34_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-34_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _10 & 18 Sept 2001_.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This non-final office action is in response to the patent application filed in the

United States on June 4, 2001. Claims 1-34 are pending.

Examiner's Note

2.   In claims 1-10 the applicant uses "means for" terminology and may invoke 35

U.S.C. § 112, paragraph 6. The examiner assumed the applicant did not intend to

invoke 35 U.S.C. § 112, paragraph 6. If the applicant requests an examination

considering 35 U.S.C. § 112, paragraph 6, please provide the specific page(s) and line

number(s) within the specification that describe the relevant claimed structure, material,

or acts.

Information Disclosure Statement

3.   Two Information Disclosure Statements were received. The first on September

10, 2001 and the second on September 18, 2001. The second was a duplicate and not

considered as part of the examination

Specification

4.   The disclosure is objected to because of the following informalities:

    a)   Page 14, line 14: Replace "forecast build curve" with "fractional build curve."

    b)   Page 18, table row 5: Delete "UF", the unconstraining factor, as it is not used.

c)   Page 24, equation 10 and page 25, equation 14: Replace "_truncate(FA/ 2)"

with "(-1)*truncate(FA/2)".

d)   Page 25, line 5: Replace "HWN-TC" with "HWN-TC-resource."

e)   Page 25, equation 13 and page 33, equation 42: Delete "=1" in the numerators.

f)   Page 26, line 5 (and subsequent recitations): Replace "TIC" with "TC."

g)   Page 27, equation 21: Define "post_date" in the table on page 18.

h)   Page 27, equation 22: Replace "eid(I-1)" with "eid(i-1)."

i)   Page 28, equation 26: Replace "frac_bid" with "frac_bld."

j)   Page 36, equations 58 and 59: The equal sign (=) should not be subscripted.

k)   Page 36, equation 54, Replace "exp_dmnd" with "exp_profit."

Appropriate correction is required.

Claim Objections

5.   Claims 5,15, and 25 are objected to because of the following informality:

"remaining" was misspelled as "remanding." These claims have been examined using

the spelling of "remaining" to be consistent with the applicant's specification.

Appropriate correction or clarification is required.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7.   Claims 11-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, invoice, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim, the recited process must somehow apply, involve, use, or advance the technological arts. Further, mere intended or nominal use of a component, albeit within the technological arts, does not confer statutory subject matter to an otherwise abstract idea if the component does not apply, involve, use, or advance the underlying process. In the present case, the rejected claims fail to apply, involve, use, or advance the technological arts. Some examples:

a) Independent claim 11 recites a method of managing revenue for an event that includes the steps of initializing, aggregating, forecasting, and optimizing. These steps as claimed do not incorporate technology that would give them patentable weight such as entering information on a computer processor. As a result, this claim is non-statutory as well the dependent claims 12-20.

b) Independent claim 21 recites a method of managing revenue for a plurality of events that includes the steps of: loading data, initializing, generating, updating, and pricing. These steps as claimed do not incorporate technology that would give them

patentable weight such as entering information on a computer processor.   As a result,

this claim is non-statutory as well as the dependent claims 22-30.

While claims 11-30 produce a useful, concrete, and tangible result, they are

deemed to be non-statutory for failing to apply, involve, use, or advance the

technological arts. In order to overcome this rejection it is respectfully suggested that

the claims be amended to expressly incorporate technology (i.e., a computer processor)

as performing at least one of the core steps of the invention.

Appropriate correction is required.

EXAMINER'S NOTE: Examiner interprets "module" and "mechanism" in the

context of the claims to be computer program products and thus claims 31 and 33 were

deemed acceptable subject matter under 35 USC § 101.

Claim Rejections - 35 USC § 112

8.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

9.   **Claims 23, 25, and 27-30 are rejected under 35 U.S.C. 112, second**

paragraph, as being indefinite for failing to particularly point out and distinctly

claim the subject matter which applicant regards as the invention.

Claim 23 recites the limitation "forecasting step" in Claim 22. There is insufficient

antecedent basis for this limitation in the claim. There are only the steps of loading,

initializing, generating, updating, and optimizing. For the purposes of examination, the

claim is interpreted with the term "forecasting step" replaced with "updating step."

Appropriate correction is required.

Claim 25 recites the limitation "forecasting step" in Claim 24. There is insufficient

antecedent basis for this limitation in the claim. There are only the steps of loading,

initializing, generating, updating, and optimizing. For the purposes of examination, the

claim is interpreted with the term "forecasting step" replaced with "updating step."

Appropriate correction is required.

Claims 27-30 recite the limitation "forecasting step" in Claim 21. There is

insufficient antecedent basis for this limitation in the claims. There are only the steps of

loading, initializing, generating, updating, and optimizing. For the purposes of

examination, the claims are interpreted with the term "forecasting step" replaced with

"updating step." Claim 29 is also rejected because it is dependent on claim 28 that

requires a change of wording. Appropriate correction is required.

Claim Rejections - 35 USC § 102

10.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11.   **Claims 1-2, 6, 11-12, 16, 21-22, 26, and 31-34 are rejected under 35**

U.S.C. 102(b) as being anticipated by Belobaba "Application of A Probabilistic

Decision Model To Airline Seat Inventory Control" (1988).

Regarding claims 1, 11, 21, and 31-34, Belobaba teaches a system and method

for optimizing the pricing/ revenue of ticket sales for one or a plurality of events to be

optimized for revenue/ pricing (p. 183, lines 4-5... teaches multiple events, "flights" is

plural) comprising:

- Event parameters including timing, resource and discount categories (p. 184,

  column 1, line 35-40... teaches day of the week/ timing, flight leg/ resource, and

  fare class/ discount categories).

- Initialization of forecasting parameters (p.188, column 2, lines 34-37... teaches

  initial booking limits may be derived before the reservation process begins).

- Aggregating historical data using forecasting parameters to generate initial

  forecast statistics and taking into account the event parameters (p. 184, column

  1, lines 24-28, lines 35-40... teaches forecasts for a future flight leg must be

  made for expected demand of each fare class and <u>average</u> revenue associated

  with each class... information on booking levels must be extracted from the

  reservation system).

- Forecasting demand by updating initial statistics based on current data (p. 187,

  column 2, lines 24-27....teaches booking levels may be revised on a regular

  basis as departure date nears; p. 188, column 1, lines 9-19... teaches repetitive

  use of the static model... but with revised input data; and p. 188, column 2, lines

  37-40... teaches [booking] limits may be revised dynamically, taking into account

  both actual bookings and estimates of future requests by fare class).

- Optimizing pricing of the event (p. 183, column 1, lines 2-4... teaches maximizing total flight revenues depends on the revenue values associated with each fare/ price; and p. 183, lines 12-21... teaches airlines charge different prices for identical seats by defining different fare products/ types... to generate incremental revenue without corresponding increases in operating cost).

Regarding claims 2, 12, and 22, Belobaba teaches a system and method for optimizing the pricing/ revenue of ticket sales comprising: aggregating/ generating initial forecast statistics according to the selection of a virtual event (constraints that define the event to be optimized) category that matches the event (p. 184, column 1, lines 13-19... teaches the constraints of an event to be considered during optimization – e.g. number of seats available in coach).

Regarding claims 6, 16, and 26, Belobaba teaches a system and method for optimizing the pricing/ revenue of ticket sales comprising: adjusting the availability of discount categories (p. 185 column 2, lines 34-46; p. 186, column 1, lines 8-11... both passages teach booking limits on lower fare classes/ discount categories).

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

   (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13.   Claims 10, 20, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belobaba as applied to claims 1-2, 6, 11-12, 16, 12, 21-22, and 26 above.

Regarding claims 10, 20, and 30, Belobaba teaches a system and method for optimizing the pricing/ revenue of ticket sales that allows a user to adjust calculations performed in the optimization step (p. 192, column 2, lines 27-35 and lines 40-47).

Belobaba does not expressly teach allowing a user to adjust calculations performed in the loading, initializing, generating, and (updating or forecasting) steps.

Official notice is taken that it is old and well known by one of ordinary skill in the art to allow a user with sufficient authority to adjust/ override calculations performed in the major steps of an optimization program to increase user control.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the Belobaba system and method for optimizing pricing/ revenue to enable the user to adjust calculations performed in the loading, initializing, and generating steps, as well as the forecasting or updating step for the advantage of increased user control.

14.   Claims 3, 7, 13, 17, 23, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belobaba (1988) as applied to claims 1-2, 11-12, and 21-22 above and in view of McGill "Revenue Management: Research Overview and Prospects" (1999).

Regarding Claims 3, 7, 13, 17, 23, and 27, Belobaba teaches the system and method, optimizing the pricing/ revenue of ticket sales comprising:

- Demand forecasting using days-out bins (p. 191, column 2, lines 14-20... teaches historical data by day (a bin size of a day's duration) before departure).

- Demand forecasting using a gross event demand (p. 188, column 2, lines 35-38... total expected requests/ demand for a flight/ event).

- Demand forecasting using end-point demand (p. 191, column 2, lines 21-23... examiner interprets end-point demand as the complete booking/ demand history for an event/ flight once it has been completed).

Belobaba does not expressly teach the adjustment for seasonal effects when aggregating statistics for the virtual category using resource and discount category combinations.

McGill teaches the aggregation of demand data while adjusting/ calculating to account for seasonality (page 245, column 2, line 50 to page 246, column 1, line 7). Belobaba and McGill are analogous in the art of revenue management for the optimization of prices for profit. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Belobaba and McGill to create a revenue management system that utilizes seasonally-adjusted forecast information for the advantage of improved accuracy.

15.   Claims 4-5, 14-15, and 24-25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Belobaba (1988) as applied to claims 1-2, 11-12, and 21-22

above in view of Zaki "Forecasting For Airline Revenue Management" Journal of

Business Forecasting (2000).

Regarding Claims 4-5, 14-15, and 24-25, Belobaba teaches the system and

method, optimizing the pricing/ revenue of ticket sales comprising:

- Initial forecasting statistics and subsequent updates include a forecast and

  remaining demand forecast (p. 188, column 2, lines 35-40).

Belobaba does not expressly teach the initial calculation and subsequent update

of a fractional build curve.

Zaki teaches a fractional build curve that is calculated throughout the booking

horizon of a flight/ event (page 4, column 1, lines 27-34). Belobaba and Zaki are

analogous in the art of revenue management for the optimization of prices for profit. It

would have been obvious to one of ordinary skill in the art at the time of invention to

combine the teachings of Belobaba and Zaki to produce a system and method of

optimizing event revenue that calculates and updates a fractional build curve for the

advantage of improved data visibility.

16.   Claims 8-10, 18-20, and 28-30 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Belobaba (1988) as applied to claims 1-2, 11-12, and 21-22

above in view of Ouimet (U.S. Patent 6,078,893).

Regarding Claims 8-9, 18-19, and 28-29, Belobaba teaches the system and method, optimizing the pricing/ revenue of ticket sales.

Belobaba does not expressly teach taking into account external factors during forecasting, and specifically: opponent information, win/loss record, promotions, and weather.

Ouimet teaches a method to include external market information that is not in the sales history data/ forecast (column 1, lines 60-65).

Official notice is taken that it is well known to one of ordinary skill in the art of competitive sport forecasting that there are several factors that influence the attendance/ ticket sales of sporting events including: opponent information, win/ loss record, promotions, and weather (as evidenced by: Drea, "The Effects of Winning, Weather, Scheduling, and Promotion On Attendance At NCAA II Men's College Basketball Games" (1995) and Welki "US Professional Football: The Demand For Game-Day Attendance In 1991" (1994)).

Belobaba and Ouimet are analogous arts in the field of financial optimization. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Belobaba and Ouimet and create a system and method to optimize the pricing/ revenue of ticket sales by including the impact of external market information that is not included in the sales history data for the advantage of improved accuracy.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Kerr (U.S. Patent 5,404,291) teaches a yield management system to control product and discount categories to optimize profit.

b) Weatherford (1997) "Using Prices More Realistically..." teaches perishable asset revenue management (PARM) optimization techniques for various price class situations.

c) Belobaba (1997) "Survey Paper: Airline Yield Management An Overview..." teaches a survey of various mathematical models of inventory control of fare classes to improve profitability.

d) Weatherford, L.R. (1987) "A Taxonomy and Research Overview..." teaches the characteristics, approaches, and terms used with perishable-asset revenue management situations.

e) Weiki (1994) "US Professional Football: The Demand..." teaches a winning record, the opponent, and the weather all impact attendance/ demand of US professional football games.

f) Drea (1995) "The Effects of Wining, Weather, Scheduling, and Promotion On Attendance..." teaches a winning record, weather, and promotion all have different impacts on the attendance/ demand of college basketball games.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Bylciw whose telephone number is 571-272-8125. The examiner can normally be reached on weekdays, 8AM-5PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on 571-272-6729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SB SB 7/15/2005

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